WE CLAIM:

1. A hydroformylation process comprising reacting a compound having at least one olefinic carbon-to-carbon bond with hydrogen and carbon monoxide in the presence of a cobalt catalyst, the hydroformylation process being carried out in one or more reactors, at least one of which comprises a gas cap region and a liquid-containing region while in use, characterized in that a sulphur-containing additive is present on the inside walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region.

2. The process of Claim 1 wherein the sulphur-containing additive is introduced on to the inside walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region while said reactor is not in use.

3. The process of Claim 2 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region in the form of a liquid or gas.

4. The process of Claim 1 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region in the form of an aqueous and/or organic solution.

5. The process of Claim 4 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region by spraying an aqueous and/or

organic solution of the additive on to the walls of said reactor.

6. The process of Claim 4 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region by filling said reactor with an aqueous and/or organic solution of the additive.

7. The process of Claim 2 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region in the form of an aqueous and/or organic solution.

8. The process of Claim 7 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region by spraying an aqueous and/or organic solution of the additive on to the walls of said reactor.

9. The process of Claim 7 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region by filling said reactor with an aqueous and/or organic solution of the additive.

10. The process of Claim 3 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region in the form of an aqueous and/or organic solution.

11. The process of Claim 10 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region by spraying an aqueous and/or

organic solution of the additive on to the walls of said reactor.

12. The process of Claim 10 wherein the additive is introduced on to the walls of the gas cap region of the at least one reactor which comprises a gas cap region and a liquid-containing region by filling said reactor with an aqueous and/or organic solution of the additive.

13. The process of Claim 1 wherein the additive is an inorganic sulfur-containing additive.

14. The process of Claim 13 wherein the inorganic sulfur-containing additive is selected from the group consisting of a metal sulfide, a metal hydrogen sulfide, and hydrogen sulfide.

15. The process of Claim 13 wherein the inorganic sulfur-containing additive is selected from the group consisting of sodium hydrogen sulfide, sodium sulfide, and hydrogen sulfide.

16. The process of Claim 1 wherein the additive is an organic sulfur-containing additive.

17. The process of Claim 16 wherein the organic sulfur-containing additive is selected from the group consisting of thiols, disulfides, thioethers, and thiophenes.

18. The process of Claim 17 wherein the organic sulfur-containing additive is selected from the group consisting of dimethylsulfide and thiophene.

19. A method for suppressing the cobalt-catalyzed formation of methane from hydrogen and carbon monoxide in a hydroformylation process carried out in a hydroformylation reactor which comprises introducing a sulfur-containing additive to the inside walls of the hydroformylation reactor.